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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/900,110	07/06/2001	John Fan	P119US1	5745

25694 7590 08/09/2005

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EXAMINER	
KIM, KEVIN	
ART UNIT	PAPER NUMBER
2638	

DATE MAILED: 08/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/900,110	FAN, JOHN	
	Examiner	Art Unit	
	Kevin Y. Kim	2638	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 June 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *26-29* is/are allowed.

6)☒ Claim(s) *1-8,14-20,23,24 and 30* is/are rejected.

7)☒ Claim(s) *9-13,21,22 and 25* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed June 1, 2005 have been fully considered but they are not persuasive.

Applicant traverse the rejection of claims 1-9, 14-20 and 30 by arguing that the Action failed to established a prima facie case of obviousness. Specifically, applicant challenges that the data packet comprised of a header and payload does not read on "a plurality of data streams." But the claims do not limit the data streams to any particular data structure. Therefore, it is reasonable to equate the header and payload portions of a received data packet described in the prior art to a plurality of data streams recited in the claims. In other words, the header is one data stream and the payload is another data stream.

Next, it is asserted that the reference fails to suggest taking a bit from each to generate a first bit grouping. It appears that applicant differentiate the claimed invention from the reference by showing that a single bit is taken from each stream according to the claims as opposed to all the bits of a header (or payload) according to the reference. Actually, however, the claims call for "selecting *at least* one bit" from each data stream to form a first bit grouping, thus the scope extends to case that all the bits of a particular stream are selected. (emphasis added) According to the reference, the separator selects the bits in the header portion of the data packet to generate a header. In other words, the bits in the header portion are selected to become "a first bit grouping." For the above reasons, the rejection of the claims is maintained.

Upon a review, the indication of allowability for claims 22 and 23 was an oversight as they were mistakenly read to depend on preceding claim 22. Claims 22 and 23 are rejected as

set forth below. Since these claims are rejected for the first time, this Office action is made non-final.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-8 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cansever et al. (US 6,807,648) in view of Wallace et al (US 6,473,467).

Consider claim 1. Referring to Fig.3, Cansever et al discloses a forward error correction method in a wireless communication system, comprising;

"receiving a plurality of data streams" (100), see col.6, lines 14-15,

"selecting at least one bit from each of the plurality of the data streams forming a first bit grouping" in that the data separator (142) selects header bits from each packet to form a header portion, see col.6 lines 15-16,

"selecting at least one bit from each of the plurality of the data streams forming a second bit grouping" in that the payload bits from each packet are selected to form "a second bit grouping," in that the data separator (142) selects payload bits from each packet to form a payload portion, see col.6 lines 15-16,

"coding the first bit grouping," (150), see col.6, lines 19-23,

"coding the second bit grouping," (156), see col.6, lines 26-31, and

"transmitting the coded first bit grouping and the coded second bit grouping." See Transmitter (20) in Fig.1. Cansever et al fails to teach "transmission through spatially

separate antennae" recited in claim 1 and "each data stream is transmitted from a corresponding spatially separate antenna."

Wallace teaches a diversity transmitter using a plurality of antennas, see Fig.1A and col.4, lines 48-49, at least for the purpose of improving performance, i.e., lowering bit error rate. See col.3, lines 36-47, col.6, lines 39-46 and col.11, line 58 – col.12, line 4, in particular, describing transmission of data through a corresponding one of a plurality of antennas. Thus, it would have been obvious to one skilled in the art at the time the invention was made to transmit the encoded data packets of Cansever et al through a plurality of antennas for the purpose of lowering error rate as taught by Wallace et al.

Regarding claim 2 calling for "selecting a plurality of bits from each data stream" for "forming a first bit grouping," since the header consists of a plurality of bits, see Fig.2, Cansever et al discloses selecting a plurality of bits from each data packet to form a first bit grouping, which is a header portion.

Regarding claim 3 calling for "selecting a plurality of other bits from each data stream" for "forming a second bit grouping," since the payload consists of a plurality of bits, see Fig.2, Cansever et al discloses selecting a plurality of other bits from each data packet to form a second bit grouping, which is a payload portion.

Regarding claim 4 transmitting each data stream "from a corresponding spatially separate antenna," Wallace describes an embodiment of diversity where data streams is demultiplexed into four data sub-streams, one data sub-stream for each transmit antenna. See col.9, lines 31-32.

Clam 5 requires that "the plurality of data streams are generated from a single primary data stream. Cansever is silent whether the data packets (100) are generated from a singly primary data stream. Wallace et al further teaches a combination of antenna, frequency and/or time diversity as a way of improving performance. See col.3, lines 34-39. it is quite established that the time diversity means repeated transmission of a same data in temporal succession. In other words, a plurality of data streams are generated from a single primary data streams and transmitted sequentially. Thus, it would have been obvious to one skilled in the art at the invention was made to generate repeat a packet for a number of times to generate a plurality of data packets in Canserver et al's transmitter as suggested by Wallace for the purpose of further improving performance.

Regarding claims 6 and 7 calling for "Reed Solomon coding" as a coding scheme, see Cansever et al, col. 4, lines 61-64 describing any known coding may be adapted to the Cansever's device including Reed Solomon coding.

Regarding claim 8 calling for a limitation that "the data streams comprise N-QAM symbols," Cansever et al teaches any type of quadrature amplitude modulation (QAM) for the packets. See col. 4, lines 10-18. In other words, bits in the packets are mapped to one of symbols of QAM, reading on the limitation.

Consider claim 30. Referring to Fig.3, Cansever et al discloses a forward error correction system in a wireless communication system, comprising;

"means for receiving a plurality of data streams" (140), see col.6, lines 14-15,

"means for selecting at least one bit from each of the plurality of the data streams forming a first bit grouping" in that the data separator (142) selects header bits from each packet to form a header portion, see col.6 lines 15-16,

"means for selecting at least one bit from each of the plurality of the data streams forming a second bit grouping" in that the payload bits from each packet are selected to form "a second bit grouping," in that the data separator (142) selects payload bits from each packet to form a payload portion, see col.6 lines 15-16,

"means for coding the first bit grouping," (150), see col.6, lines 19-23,

"means for coding the second bit grouping," (156), see col.6, lines 26-31, and

"means for transmitting the coded first bit grouping and the coded second bit grouping." See Transmitter (20) in Fig.1. Cansever et al fails to teach "transmission through spatially separate antennae."

Wallace teaches a diversity transmitter using a plurality of antennas, see Fig.1A and col.4, lines 48-49, at least for the purpose of improving performance, i.e., lowering bit error rate. See col.3, lines 36-47, col.6, lines 39-46 and col.11, line 58 – col.12, line 4, in particular, describing transmission of data through a corresponding one of a plurality of antennas. Thus, it would have been obvious to one skilled in the art at the time the invention was made to transmit the encoded data packets of Cansever et al through a plurality of antennas for the purpose of lowering error rate as taught by Wallace et al.

4. Claims 14-20,23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cansever et al. (US 6,807,648) in view of Wallace et al (US 6,473,467) and Hinedi et al (US 6,263,466).

Claim 14 defines a method of error correction decoding comprising;

"receiving a plurality of data streams received through spatially separate antennae,"

"selecting at least one bit from each of the plurality of the data streams forming a first bit grouping,"

"selecting at least one other bit from each of the plurality of the data streams forming a second bit grouping,"

"decoding the first bit grouping,"

"decoding the second bit grouping," and

"constructing decoded bit streams based upon the decoded first bit grouping and the decoded second bit grouping." The claimed invention in claim 14 is essentially a reverse process of the invention defined in claim 1 at a receiver side. Although Cansever et al in combination with Wallace teach the invention of claim 1 drawn to an encoding system, the combination fail to disclose an error correction decoding at a receiving side that would correspond to the error correction encoding method. However, Hinedi et al teaches a decoding method that reverses an encoding method in a wireless communication system. Specifically, Fig. 10 of Hinedi et al shows that each of received data streams is separated into a first grouping, i.e., header, and a s second grouping, i.e., payload, by a demixer (124) and each group is separately decoded (126,133). Thus, it would have been obvious to one skilled in the art at the time the invention was to reverse the encoding sequence of Cansever et al at a receiver by receiving data

packets, selecting encoded header bits from each packet to form "a first grouping" and encoded payload bits to form "a second grouping," decoding each group in accordance with their respective error encoding method, and constructing the whole packet from the decoded header and payload bits, as taught by Hinedi et al.

Furthermore, Wallace et al teaches a diversity receiver using a plurality of antennas to improve reliability of the communication link. See col.5, lines 62-67. Thus, it would have been obvious to at the time the invention was made to design the decoding method, as explained above, to receive data stream through spatially separate antennae for the purpose of improving reliability of the communication link, as taught by Wallace et al.

Regarding claim 15, calling for "selecting a plurality of bits from each data stream" for "forming a first bit grouping," since the header consists of a plurality of bits, see Fig.2, Cansever et al discloses selecting a plurality of bits from each data packet to form a first bit grouping, which is a header portion.

Regarding claim 16 calling for "selecting a plurality of other bits from each data stream" for "forming a second bit grouping," since the payload consists of a plurality of bits, see Fig.2, Cansever et al discloses selecting a plurality of other bits from each data packet to form a second bit grouping, which is a payload portion.

Regarding claim 17 calling for "a corresponding spatially separate antenna," see Fig.1 of Wallace and col. 6, lines 48-51.

Regarding claims 18 and 19 calling for "Reed Solomon coding" as a coding scheme, see Cansever et al, col. 4, lines 61-64 describing any known coding may be adapted to the Cansever's device including Reed Solomon coding.

Regarding claim 20 calling for a limitation that "the data streams comprise N-QAM symbols," Cansever et al teaches any type of quadrature amplitude modulation (QAM) for the packets. See col. 4, lines 10-18. In other words, bits in the packets are mapped to one of symbols of QAM, reading on the limitation.

Regarding claims 23 and 24, Wallace teaches a multi-carrier transmission such as OFDM as one of multiple transmission channels. See col. 2, lines 50-56.

Allowable Subject Matter

5. Claims 9-13,21 and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Claims 25-29 are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Y. Kim whose telephone number is 571-272-3039. The examiner can normally be reached on 8AM --5PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Venderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

/Kevin Kim/

KEVIN KIM
PATENT EXAMINER